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Endobronchial metastatic disease

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ABSTRACT Between 1969 and 1979, 90 patients of the Thoracic Surgical Unit at Harefield Hospital were found to have pulmonary metastatic disease. In 25 instances (28%) the diagnosis was established by bronchial biopsy. Twenty-four patients had endobronchial metastatic carcinoma and in one metastatic sarcoma was diagnosed. All but one had a past history of malignancy, the interval between treatment of the primary and appearance of the endobronchial metastasis ranging from a few months to 17 years. Primary sites in these patients included large intestine, breast, cervix, uterus, and bladder. There were four instances of metastatic malignant melanoma. The pulmonary secondaries were resectable in 10 patients and in one a second resection was done for a further metastasis three years after the first. Three patients are still alive two, four, and 10 years later.

It is reported that the incidence of endobronchial metastatic disease is about 2%.[1] This figure was reached by a review of postmortem findings. In the present series of 90 surgical patients with pulmonary metastases, 28% had endobronchial tumour. All the lesions were readily visible bronchoscopically, involving bronchi proximal to subsegmental level. These findings suggest that the incidence of bronchial involvement by pulmonary secondaries is greater than generally supposed and that bronchoscopy should form an essential part of the investigation and assessment of such patients, whether the diagnosis is suspected or not.

Methods

Since 1969 the surgeons of the Thoracic Surgical Unit at Harefield Hospital have seen 90 patients who, being investigated in the usual way with a view to surgery, were found to have pulmonary metastatic disease. All underwent bronchoscopy and a pre-treatment diagnosis was established by bronchial biopsy in 25. The rigid Negus bronchoscope was used under general anaesthesia in every instance. Twenty-four of the patients had a past history of malignancy and in the remaining patient the pulmonary lesion was the presenting feature of the disease. The primary sites which gave rise to endobronchial metastases in this series are listed in table 1. The remainder of the 90 patients had pulmonary metastases with no endobronchial involvement and are not considered further in this paper.

Table 1 *Incidence of positive bronchoscopic findings in tumours causing endobronchial metastases*

Primary site	*Patient No*	*Positive bronchoscopy and biopsy*	*Resected*
Carcinoma			
Large intestine	22	5	3
Cervix	10	5	2
Breast	18	5	—
Melanoma	5	4	2
Bladder	5	2	1
Uterus	1	1	—
Penis	1	1	1
Larynx	2	1	—
Sarcoma			
Uterus	2	1	1
	Total	25	10

Treatment of the endobronchial metastases was surgical if resection was appropriate and technically feasible. This proved to be the case in 10 instances. Four required pneumonectomy, five had lobectomy and one patient had a segmental resection. Inoperability was determined by mediastinal gland or pleural involvement or evidence of other distant metastases. In two instances the lesion was deemed inoperable on bronchoscopic grounds alone.

In all instances, especially those with squamous cell carcinoma, the diagnosis of pulmonary metastatic disease was confirmed by review of the histology of both primary and pulmonary lesions. Only if the two tumours were identical histologically was the case included in this review.

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Results

The results are shown, grouped according to primary site, in table 2. Fourteen of the 25 patients died within a year of diagnosis of the endobronchial metastasis. Four lived for between 12 and 22 months and two for 26 and 44 months. All succumbed to their disease. One patient died after 32 months from renal failure resulting from post-irradiation fibrosis of the pelvis, and another survived resection of his first metastasis only to die from a pulmonary embolus after resection of a second metastasis 36 months later. Three patients are still alive and well with no sign of recurrence at two, four, and 10 years.

HISTOLOGY, PRIMARY SITE, AND SURVIVAL

Metastatic adenocarcinoma from large intestine, breast, and uterus arose in seven patients. Of the five whose primaries had been in large intestine, four died of further recurrence after seven, 12, 13, and 26 months. One is alive and well 10 years later. One patient with endobronchial metastasis from a breast tumour died after eight months but one with endobronchial recurrence from a uterine primary is alive and well four years later.

Seven patients had metastatic squamous carcinoma arising from cervix, penis, and larynx. Three of the five who had had carcinoma of cervix died of recurrence two, five, and seven months later. One died from complications of pelvic irradiation after 32 months but one is alive and well two years later. The other two patients died of their disease after two and nine months.

Metastatic transitional cell carcinoma caused the death of one of two patients four months after diagnosis of the pulmonary lesion. The other survived resection of one metastasis only to succumb 36 months later from postoperative pulmonary embolus after residual pneumonectomy for a second metastasis which had also been diagnosed by bronchial biopsy.

All the patients with metastatic malignant melanoma died within a year of diagnosis as did three of the four patients with metastases from intraduct or spheroidal cell carcinoma of breast. The fourth lived for 44 months. One patient with an endobronchial lesion from a leiomyosarcoma of the uterus died of recurrence 22 months later.

Of the three patients still alive, two had adenocarcinoma. They are well after four and 10 years.

Table 2 *Clinical features of 25 patients with endobronchial metastases.*

Primary site	*Cell type*	*Primary-secondary interval (years)*	*Operation*	*Sex*	*Outcome*	
Large intestine	Mod diff adeno	4	—	M	Died 7 mo	Recurrence
Large intestine	Mod diff adeno	1	—	F	Died 12 mo	Recurrence
Large intestine	Well diff adeno	4	Pneumonectomy	M	Died 13 mo	Recurrence
Large intestine	Mod diff adeno	2	Lobectomy	M	Died 26 mo	Recurrence
Large intestine	Poorly diff adeno	5	Lobectomy	F	Alive 10 yr	Well
Cervix	Mod diff squam	1	—	F	Died 5 mo	Recurrence
Cervix	Mod diff squam	1	—	F	Died 2 mo	Recurrence
Cervix	Poorly diff squam	3	—	F	Died 7 mo	Recurrence
Cervix	Poorly diff squam	5	Pneumonectomy	F	Died 32 mo	Renal failure, no recurrence
Cervix	Poorly diff squam	3	Pneumonectomy	F	Alive 2 yr	Well
Breast	Intraduct	8	—	F	Died 6 mo	Recurrence
Breast	Poorly diff adeno	9	—	F	Died 8 mo	Recurrence
Breast	Spheroidal cell	17	—	F	Died 3 mo	Recurrence
Breast	Spheroidal cell	0	—	M	Died 13 mo	Recurrence
Breast	Spheroidal cell	3	—	F	Died 44 mo	Recurrence
Skin	Malignant melanoma	2	—	F	Died 10 mo	Recurrence
Skin	Malignant melanoma	3	—	M	Died 11 mo	Recurrence
Skin	Malignant melanoma	14	Lobectomy	F	Died 9 mo	Recurrence
Skin	Malignant melanoma	17	Segment resection	F	Died 4 mo	Recurrence
Bladder	Transitional cell	1	—	M	Died 4 mo	Recurrence
Bladder	Transitional cell	12	Lobectomy	M	Lived 36 mo	Pulmonary embolus
		15	Residual pneumonectomy		Died 2 d	
Uterus	Mod diff adeno	2	—	F	Alive 4 yr	Well
Uterus	Leiomyosarcoma	2	Pneumonectomy	F	Died 22 mo	Recurrence
Penis	Well diff squam	3	Lobectomy	M	Died 2 mo	Recurrence
Larynx	Mod diff squam	4	—	M	Died 9 mo	Recurrence

Mod = moderately; diff = differentiated; adeno = adenocarcinoma; squam = squamous carcinoma; mo = months; yr = years; d = days.

The third had squamous cell carcinoma and is free of disease two years later.

PRIMARY-SECONDARY INTERVAL AND SURVIVAL

Only one patient in this series presented with both endobronchial and primary lesions simultaneously. The primary was a spheroidal cell carcinoma of the breast and the patient died 13 months later.

Sixteen patients had a primary-secondary interval of one to four years. Half died of their disease within one year of diagnosis of the pulmonary metastases. Six died 13-44 months later. Two are still alive two and four years later with no evidence of recurrence.

In four patients the interval was five to nine years. Two with breast primaries died six and eight months after diagnosis of the endobronchial metastasis. One who had a metastasis from a carcinoma of the cervix died after 32 months from non-malignant causes. One is alive and well 10 years after resection of a metastasis from the large intestine.

In four patients the interval was 10 or more years. Two with malignant melanoma lived for only four and nine months and one with metastatic breast carcinoma for only three months. One patient who developed a bladder metastasis underwent lobectomy and three years later developed a further secondary. This was also resected but the patient died post-operatively from a pulmonary embolus.

RESECTION AND SURVIVAL

Ten of the 25 patients had resectable pulmonary lesions (table 2).

Four patients required pneumonectomy. Two died 12 and 22 months afterwards from recurrence. One died after 32 months with no recurrence evident and one is alive and well two years later.

Lobectomy was done in five instances. Three patients died of their disease two, nine, and 26 months later. One succumbed after residual pneumonectomy 36 months after lobectomy and one is alive and well 10 years later.

The one patient who had a segmental resection died after four months from recurrence of the disease.

Discussion

From a review of the literature (table 3) it appears that the most common primary tumour to metastasise endobronchially is the hypernephroma, 18 cases having been reported.[2-10] However, none of the eight instances in the present series of 90 patients had visible endobronchial involvement. The second most common metastasis found in the bronchial tree is reputedly from breast, 17 instances being previously recorded.[2 12-15] This report adds a further five. Similarly 11 cases of endobronchial spread from the large intestine have been reported[2 3 5 9 18 19] and a further five are presented here. Endobronchial malignant melanoma has been documented on three occasions[3 11 16] and a further four instances are now reported.

Table 3 *Numbers of cases of endobronchial metastases reported in this and other series*

Primary site	*Previous reports*	*Harefield series*
Breast	17	5
Colon-rectum	11	5
Melanoma	3	4
Uterus-cervix	3	6
Leiomyosarcoma	1	1
Larynx, penis	—	1 each
Bladder	—	2

The difficulty of determining whether an endobronchial lesion, particularly squamous carcinoma, is primary or secondary is obvious. This review adds five further examples of endobronchial involvement from carcinoma of the cervix and one instance of adenocarcinoma from the uterus to the three previously reported.[11 17] Also included is one example of metastatic leiomyosarcoma arising from the uterus. Only one other instance is documented.[17]

No record could be found of endobronchial metastases arising from transitional cell carcinoma of the bladder. This paper presents two cases. Also included are previously unreported examples of squamous cell lesions arising from penile and laryngeal primaries.

The results of the present study suggests that endobronchial metastatic involvement does not necessarily indicate a gloomy prognosis and positive bronchial biopsy should not constitute a deterrent to surgery. In this series 28% of patients with pulmonary metastases yielded a positive biopsy at bronchoscopy. It is clear, therefore, that bronchoscopy is a valuable and expeditious method of establishing the diagnosis, allowing management to be planned and started quickly. It should be an essential and early part of the investigation of such patients.

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